Jenkins Documentation

Basics of Jenkins Automation Server

Jenkins is an open-source automation server used to automate tasks involved in building, testing, and deploying software. It is widely used for implementing Continuous Integration and Continuous Delivery (CI/CD).

Key Features

- Automates repetitive tasks in software development
- Integrates with various development and deployment tools
- Supports pipeline-as-code through Jenkinsfile
- Highly customizable with plugins

Core Concepts

Concept	Description
Job/Project	A unit of work executed by Jenkins
Pipeline	A script-defined workflow used for CI/CD processes
Node/Agent	Machines that run jobs assigned by Jenkins
Master/Controller	Controls scheduling and delegating tasks to agents
Plugin	Adds additional functionality to Jenkins

1. Common CI/CD Deployment Method Using Jenkins

Continuous Integration (CI)

Continuous Integration is a practice where developers frequently push code into a shared repository. Jenkins helps by automatically pulling the latest code, building the application, running automated tests, and generating build artifacts.

Continuous Delivery/Deployment (CD)

After integration, Jenkins can deploy applications to staging or production servers, integrate with automation tools like Ansible or Docker, and notify teams about deployment statuses.

Typical CI/CD Pipeline Flow

1. Developer pushes code to version control (GitHub/GitLab/Bitbucket)
2. Jenkins detects the update
3. Jenkins pulls the latest code
4. Builds the application using a build tool (Maven, npm, etc.)
5. Runs tests
6. Packages and stores artifacts
7. Deploys the application to the desired environment
8. Sends a notification to the team

Common Plugins Used

Plugin	Purpose
Git	Pulls source code from repositories
Maven/Gradle	Builds Java-based projects
Docker	Creates and deploys containers
Pipeline	Enables writing Jenkins pipelines
Slack/Email	Sends build notifications

2. Install Java (OpenJDK 17)

Jenkins requires Java to run. Install Java 17 using the following command:

Amazon Linux 2023:
sudo dnf install java-17-amazon-corretto -y

Amazon Linux 2:
sudo yum install java-17-amazon-corretto -y

Verify installation:
java -version

3. Install Jenkins

Add Jenkins repository and install Jenkins using the following commands:

sudo wget -O /etc/yum.repos.d/jenkins.repo https://pkg.jenkins.io/redhat-stable/jenkins.repo
sudo rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io-2023.key

sudo yum install jenkins -y

Enable and start Jenkins:
sudo systemctl enable jenkins
sudo systemctl start jenkins

Check Jenkins status:
sudo systemctl status jenkins

4. Access Jenkins Dashboard

Open Jenkins by visiting: http://<your-server-public-ip>:8080

Retrieve admin password:
sudo cat /var/lib/jenkins/secrets/initialAdminPassword

Paste the password in the browser and install the suggested plugins.

5. Install and Configure Git

Install Git:
sudo yum install git -y

Verify installation:
git --version

Configure Git (optional):
git config --global user.name "Your Name"
git config --global user.email "your-email@example.com"

6. Integrate Jenkins with GitHub

1. Go to GitHub → Settings → Developer Settings → Personal Access Tokens → Tokens (classic)
2. Click 'Generate new token' and select scopes: repo, workflow, admin:repo_hook
3. Copy the token
4. In Jenkins → Manage Jenkins → Credentials → Global → Add Credentials
5. Select 'Secret Text' and paste the token
6. Give ID name: github-token

7. Create index.html

Create a Jenkinsfile in the root of your GitHub project with the following content:

Echo “Hello from Jenkins”

8. Push Jenkinsfile to GitHub

```
git add index.html
git commit -m "Initial index.html for Jenkins deployment"
git push origin master
```

9. Configure Jenkins Pipeline Job

1. Jenkins Dashboard → New Item → Enter name 'linux-cicd-pipeline'
2. Select 'Pipeline' → OK
3. Under Pipeline section:
   - Definition: Pipeline script from SCM
   - SCM: Git
   - Repository URL: https://github.com/itzzmeanjali/simple-web-deploy.git
   - Credentials: Select GitHub token
   - Branch: master
4. Save and click 'Build Now'

10. Troubleshooting Build Failures

- Check Console Output for red lines or 'ERROR:' messages.
- Common issues:
  * Wrong Git repo URL or branch name
  * Jenkins permission errors
  * Jenkinsfile syntax errors

Allow Jenkins to run sudo commands:
sudo visudo
Add line:
jenkins ALL=(ALL) NOPASSWD: ALL

11. Verify Deployment

Visit http://<your-server-public-ip>/ to verify that your PHP app is deployed successfully.

12. Optional: Webhook Setup for Automation

1. In GitHub repo → Settings → Webhooks → Add Webhook
2. Payload URL: http://<jenkins-public-ip>:8080/github-webhook/
3. Content type: application/json

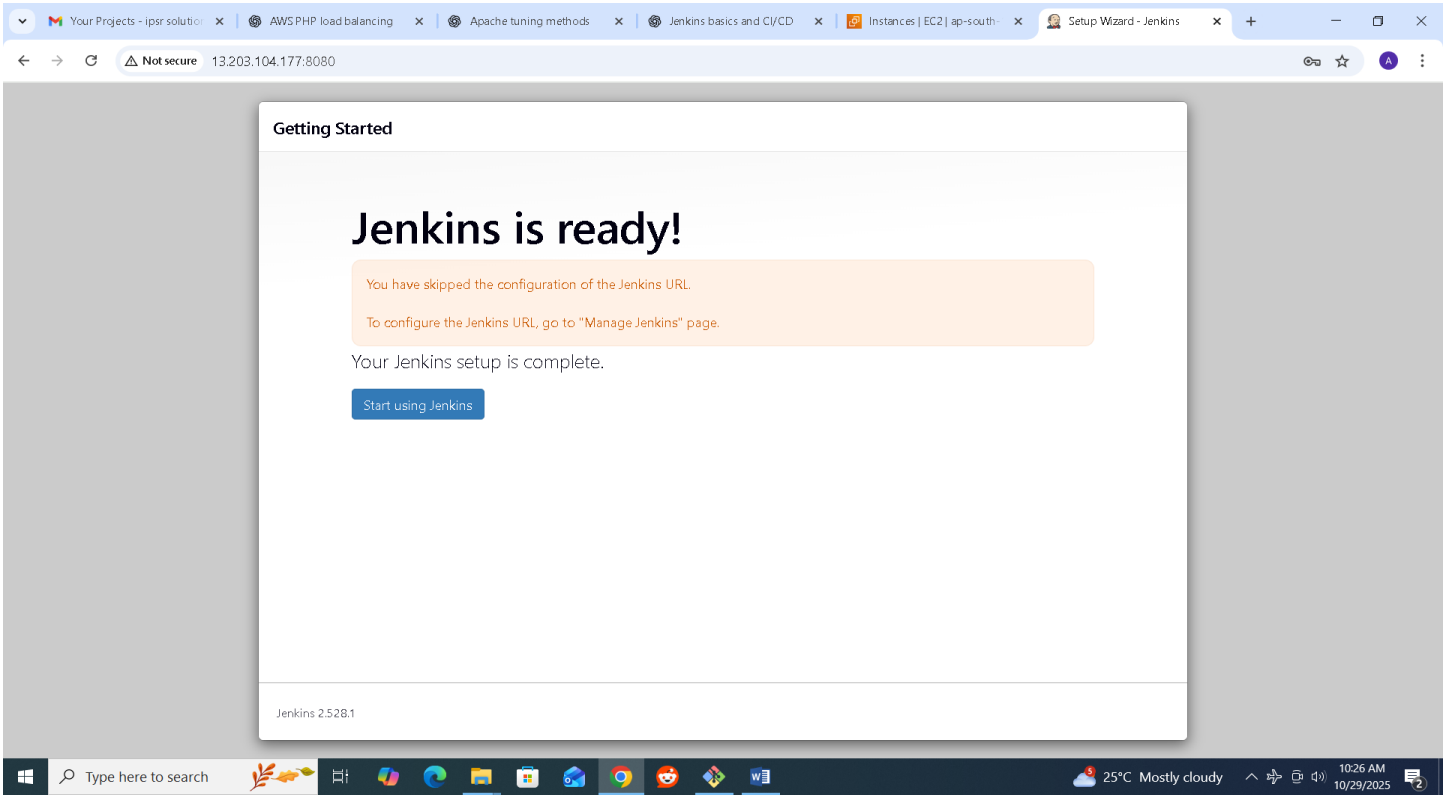
4. Trigger: Just the push event
5. Save

13. CI/CD Flow Summary

1. Developer commits code → GitHub
2. Jenkins fetches the latest code
3. Jenkins builds and deploys it to /var/www/html/
4. The PHP app is live instantly

14. Conclusion

You have successfully configured Jenkins on Amazon Linux to automate the CI/CD process for PHP web applications. This setup enables efficient continuous deployment and integration for faster delive



Your Projects - ipsr solutio | AWS PHP load balancing | Apache tuning methods | Jenkins basics and CI/CD | Instances | EC2 | ap-south- | Dashboard - Jenkins

Not secure 13.203.104.177:8080

Jenkins

New Item

Build History

Build Queue

No builds in the queue.

Build Executor Status 0/2

Built-In Node (offline)

Add description

Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

Start building your software project

Create a job

Set up a distributed build

Set up an agent

Configure a doud

Learn more about distributed builds

REST API Jenkins 2.528.1

Type here to search 25°C Mostly cloudy 10:28 AM 10/29/2025

Your Projects - ipsr solutio | AWS PHP load balancing | Apache tuning methods | Jenkins basics and CI/CD | Instances | EC2 | ap-south- | All [sample] - Jenkins

Not secure 13.203.104.177:8080/job/new-1/

Jenkins / sample

Status

Configure

New Item

Delete Folder

Build History

Rename

Credentials

Build Queue

No builds in the queue.

Build Executor Status 0/2

Built-In Node (offline)

sample

Folder name: new-1
its a sample one for educational purpose

All

Add description

This folder is empty

Create a job

REST API Jenkins 2.528.1

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Not secure 13.203.104.177:8080/manage/configureTools/

Jenkins / Manage Jenkins / Tools

+ Add JDK

Git installations

Git

Name

git

Path to Git executable ?

/usr/bin/git

Install automatically ?

+ Add Installer

+ Add Git

Save Apply

Not secure 13.203.104.177:8080/manage/credentials/store/system/domain/_/newCredentials

Jenkins / Manage Jenkins / Credentials / System / Global credentials (unrestric...

New credentials

Kind

Username with password

Scope ?

Global (Jenkins, nodes, items, all child items, etc)

Username ?

Blank username; did you mean to use secret text credentials instead?

Treat username as secret ?

Password ?

ID ?

Create

Not secure 13.203.104.177:8080/manage/credentials/store/system/domain/_/

Jenkins / Manage Jenkins / Credentials / System / Global credentials (unrestric...

Global credentials (unrestricted)

+ Add Credentials

Credentials that should be available irrespective of domain specification to requirements matching.

ID	Name	Kind	Description
github-credentials	itzzmeanjali/******	Username with password	

Icon: S M L

REST API Jenkins 2.528.1

github.com/itzzmeanjali/simple-web-deploy/blob/master/index.html

itzzmeanjali / simple-web-deploy

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

Files

master

Go to file

Jenkinsfile

README.md

index.html

simple-web-deploy / index.html

itzzmeanjali Update index.html 1585c51 · 18 minutes ago History

Code Blame 1 lines (1 loc) · 26 Bytes Raw

```
echo "hello from jenkins"
```

Not secure 13.203.104.177:8080/job/linux-cicd-pipeline/14/console

Jenkins / linux-cicd-pipeline / #14 / Console Output

- Status
- Changes
- Console Output
- Edit Build Information
- Delete build '#14'
- Timings
- Pipeline Overview
- Replay
- Pipeline Steps
- Workspaces
- Previous Build

Console Output

Download Copy View as plain text

```
Started by user anjali k
Obtained index.html from git https://github.com/itzzmeanjali/simple-web-deploy.git
[Pipeline] Start of Pipeline
[Pipeline] echo
hello from jenkins
[Pipeline] End of Pipeline
Finished: SUCCESS
```

REST API Jenkins 2.528.1

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Not secure 13.203.104.177

Hello from Jenkins CI/CD

Type here to search 27°C Partly cloudy 7:24 PM 10/29/2025